Ventilating device

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Abstract of **DE3828852**

Devices of this type have a relatively unfavourable ratio of volume rate of flow to overall volume, in particular to the overall height of such a device, so that with a selected overall height the air output is either unsatisfactory or with a sufficient volume rate of flow the actual window area intended for the passage of light is restricted. A solution to the problem is achieved in that the overall volume between two transoms is optimally utilised and the distance of the transoms from a [lacuna] is determined merely by the fluidically conditioned air passage area, brought about by a multi-function housing which is at the same time also a volute for a fan impeller and a weather protector. The ventilating device is used chiefly in window and facade construction.

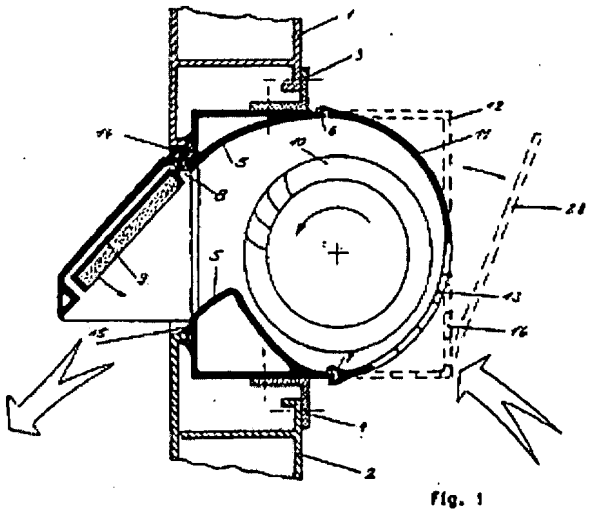

Fig. 1

Result Page

The invention concerns a ventilation mechanism for constructional integration in the window and front range.

Here frequently the necessity results to integrate - approximately because of not opening window wing and at the same time not existing central ventilating system - decentralized arranged ventilation devices for and/or waste air in the window or facade construction. This requirement arises both in the private as well as to commercial use range of the premises concerned and is in all other respects independent of the used construction materials such as wood, plastic or light alloy.

With well-known devices it is to be recognized that the manufacturers are endeavored around small cross section geometry in principle, so that with given build-lateral window height unnecessarily eigentlic the window area intended for the light by flow does not have to be taken up and on the other hand the architecture of a window construction is not loaded by the impression of a certain Klobigkeit.

Into these housings of the well-known ventilation mechanisms radial fans are usually built in the form of single devices, which supply either the interior outside air which can be ventilated and/or. Room air outward transport.

The location of such devices predominantly lies in the upper window area; with structural special cases also occasionally lateral or underneath the window.

For air flow-technical reasons and under the aspect of a relative no-draughtness for in persons whom are such area the location in the upper window area is to be preferred.

Since the well-known devices must realize now also a minimum volume stream - defined depending upon space use in DIN 1946 -, the devices achieve certain minimum dimensions. In the case of the effort to reach e small cross section profile usually a relatively unsatisfactory relation of air achievement (volume stream) results to construction volumes of the entire ventilation mechanism.

In all rule scientifically secured method of the intermittant ventilation is not realizable with the well-known solutions, which ensure usually only the thing-measured minimum volume stream, under energy-savingstechnical aspects publicised and.

Thus become with well-known solutions, e.g. as is the case for CO2 82,133, DE-OS 29 42 482 or DE-OS 32 00 210 in principle inserted into the existing equipment housings fans, which for their part again a housing, which exhibits so-called snail. Here is erkennb that this type of construction inevitably to more construction volumes leads.

The moreover it is shown by the writings mentioned that the gap between two Kempfern, cross bars of the window framework construction, for the admission of the ventilation mechanism is always equal to the overall height of the housing of the ventilation mechanism. That has the disadvantage that between the Kempfern more place is stressed, is as regards ventilation needed and in actually unnecessary way the Kempferabstand increases and an optical weight in window architecture causes.

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In the rest of the wise well-known solutions a catch possibility between outside and interior air only over the interior turned side in form of a flap, used on that by persons, up, so that the interior of the ventilation mechanism with its construction units also with operating stop - usually the predominant allocated time on the life span of the mechanism - which external dampness and - temperature and thus unnecessary corrosion endangerment are suspended.

The subject of the invention is therefore such a ventilation mechanism, which the diverging demands for higher volume volume at at the same time smaller construction volume (with it in particular smaller overall height) of the mechanism fulfilled and which is characterized by the fact that an at least two-piece, extruded housing (light alloy or plastic) is in multifunction also snail for the fan impeller and enclosure at the same time.

From this the advantages of an optimal cross section use, the smallest material employment, short Fertigungszei and minimum Kempferabstände result; altogether smaller construction volume during comparable air achievement.

Fig. 1 shows a cross section by a Lüftungsvorrichtung in the version for waste air enterprise as example of an execution form of the invention.

Between the Lüftungsvorrichtung taking up Kempfern 1 and 2 is preferably fastened so the Lüftungsvorrichtung in accordance with the invention by means of over the entire length of the device running angle 3 and 4 to these by means of simple bolt connections that the piece of profile of 5 in the firm grip over the sealing rims 14 and 15 are pressed to the thighs of the Kempfer 1 and 2.

The profile 5 consists plastic or light alloy of extruded sections, material either. Geometry is trained in such a way with the fact that the profile takes over right-angled to each other of 5 its exterior surfaces standing in the range (outside) the housing function and the inner surfaces represent a part of the snail for the impeller 10. In the extruded section 5

formed the cavities can be used as troughings for conductions or in the case of plastic for reinforcements by means of steel sections.

The further process of the profile 5 outward is in such a way trained that the bent surface within the range between the sealing rim 14 and the lower end designed as drip stud has both enclosure function and at the same time by those here surface-concisely to in-lie and tangential to the upper interior curve following opened flap has 9, air guidance function and thus the flowtechnically necessary length of the snail realizes.

The flap 9 preferably which can be adjusted over actuator is likewise manufactured in the extruding procedure. In case of of light alloy for the reduction of the heat transfer a Ausklebung with plastic, locking surface-concisely with the profile, is made.

The flap profile is provided with preferably a joint 8 working over the entire length of the profile 5.

The second part of the two-piece developed housing and - because of the multifunction - second part of the snail, at the same time also revision flap, are formed by the extruded section 11, as in the range of the air by footstep a lattice 13, at least as access protection, is trained used.

The connection to the profile 5 is in such a manner arranged that the profile 11 by means of joint 7 over approx. The profile 11 due to its pre-loading into the rest nose 6 trained in the profile 5 knows 90 DEG to be swivelled and engages when closing the Lüftungsvorrichtung.

If without swivelling the profile 11 one does, also a same rest nose can step in accordance with 6 in place of the joint 7.

The arrangement of the profile 11 regarding its outer contour is to be seen here only exemplary. While maintaining the upper piece of curve for the snail can among other things a right-angled outer contour to be realized, whereby the air inlet is then done via egg lattice 16.

Fig. 1 makes clear as effect of the invention that the gap between the Kempfern 1 and 2 is only determined by the height of the actual and constructionally caused air by footstep and not represented by the overall height of the equipment housing, by the exterior surfaces of the profile 5.

Fig. 1 makes further clear, how by function summary snail minimum cross section geometry and a concomitantly smaller material employment extended of housing and snail as well as enclosure is realized as.

Fig. the ventilation mechanism for the mode of operation supply air shows 2 on the basis same of in principle considerations as with Fig. 1.

In place of the profile 5 steps here a profile 17, which is almost identical however up to the lower range. The deviating arrangement of this lower range is current.

The profile 18 is here rectangular trained, since the snail training on the blowing out side stresses corresponding area. The profile 18 again finally by a lattice 20. A preformed fly grille 23 is kept relatively wide by the slots planned before it so that in the case of given mesh size a minimum air resistance results. In addition, the arrangement of a fly grille 25 is appropriate, if the concrete dimensions are in approximately equivalent.

A heating up of the supply air by the heating staffs 21 is possible, if an increased profile 22 is used as second housing half.

Fig. 3 shows, how using the invention thought axial flow fans can be used into a shape of the housing of same outer contour in favourable way. For the minimization of air resistance is a condition that the axle of the fan hub 54 lies about parallel in the air flow of the ventilation mechanism and in approximately centric to the air depressing surfaces. This is reached by as the profile 55 is so trained that the notice surfaces 56 intend the angle for the fan.

With the Fig. a flap 28 is suggested 1, 2, 5, which can be fastened alternatively down or above and as catch possibility with operating stop is likewise used.

Fig. 4, as when using light alloy in more appropriate and actually well-known way in outer part of the housing the thermal separations 33, 34, 55 shows to be inserted can.

Fig. 5 clear makes to be reached as in further pursuit of the invention thought, small cross section geometry with in particular small overall height a favourable solution variant results in. Here that does not become equipment outer part of the ventilation mechanism as with Fig. 1 and 2 between two Kempfer pushed and then bolted on. Rather housings 30 are upper and as well as lower Kempfer and/or. Kempferanteil in a closed cross section included. The Gesamtprofil can be provided either from a Strangpresspr or also in accordance with Fig. 9 with a bar 27 to be joined.

Since those benefit the external housing of the ventilation mechanism of cross section portions which can be added the surface moment of inertia of the Kempfer, the total overall height can be further reduced by ventilation mechanism and Kempfer thereby, as the Kempferbauhöhe is given, like that as it when using single profiles, is reduced.

Fig. a further arrangement possibility of the invention shows 6 such that so far outward the pointing, from which Senkrechten spread bevel of the enclosure into the Gesamtprofil 36 of the profile combination Aussengehäuse/Kempfer is outward surface-concisely included.

The Fig. 7 and 8 makes clear that on the basis of the thought according to invention both shunt current as well as can be realized radial fans.

Fig. a ventilation mechanism with cross-flow fan roller 10 shows 7 with removed internal Gehäuseteil. The mechanism is locked laterally with the final soils 37 and 38. The areas for the flap control drive 29 and driving motor (the exhaust roller) 43 are separate by closed partition walls, whose outer contour agrees with the internal contour of the extruded section, from the exhaust roller 10. The exhaust roller is stored with the Wellenzapfen 42 and the drive shaft 41 in the partition walls.

Since with the principle of the shunt current fan the exhaust roller is flowed through within the range of 90 DEG -180 DEG, the length of the air intake openings on both equipment sides is in for instance equal to the Län the exhaust roller.

Fig. a ventilation mechanism with drum rotors of the radial fan principle shows 8 with removed internal Gehäuseteil. The mechanism is locked again laterally with final soils.

Areas 44, 48 and 53 represent suction chambers, which are connected by means of flowing in nozzles with the pressure chambers, in which the Trommelräder 46 and 51 are. By the engine 49 here exemplarily 2 Trommelräder are propelled, however also the drive of only one Trommelrad is or more possible for than two.

Due to the sucking and pressure chambers shifted over the equipment longitudinal axis also the sucking in and blow-out ports (air depressing surfaces) are assigned and in their length to the length of pressure and suction chambers adapted accordingly.

Whether it concerns or a waste air execution, is for the explanation of the Fig. 7 insignificant. Sucking in and blow-out ports lie as a function of away or supply air execution, related to the vertical axis of the housing cross section, inversly to each other arranged.

Fig. a ventilation mechanism, which is not motor operated, shows 9, but works according to the principle of the wake. Using already from the Fig. 1 and 2 well-known parts by use part of the original housing a unit is practically only created fastened with very small depth, those only with a screen 24, according to the same mechanical principles as in Fig. 1 and 2 is locked. The fly grille 26 is also here as wide as possible used for the reaching of a lowest possible air resistance.

Beyond that Fig shows. 9 that right Gehäuseteil, so far the extruded sections 5 or 17, can be held together also from partial profiles, by means of a wall 27 over groove feather/spring system positively, provided.